



Environmental Assessment

2001 - Grayling Creek - North of US 20

STPHS 50-1(20)10

Montana Department of Transportation



ENVIRONMENTAL ASSESSMENT
for
STPHS 50-1(20)10
2001 – Grayling Creek – North of US 20
(CN 5026)
in
Gallatin County, Montana

This document is prepared in conformance with the Montana Environmental Policy Act (MEPA) requirements and contains the information required for an Environmental Assessment under the provisions of ARM 18.2.237(2) and 18.2.239. It is also prepared in conformance with National Environmental Policy Act (NEPA) requirements for an Environmental Assessment under 23 CFR 771.119, and Section 4(f) of the U.S. Department of Transportation Act under 23 CFR 771.135.

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and Executive Orders 11990, 11988, and 12898, by the

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION

AND THE

MONTANA DEPARTMENT OF TRANSPORTATION

AND THE

US FOREST SERVICE, as a Cooperating Agency

Submitted by: _____

Montana Department of Transportation
Environmental Services Bureau

Date: _____

1/30/08

Reviewed &

Approved

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U.S. Department of Transportation
Federal Highway Administration

Date: _____

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Abstract: The proposed project is a highway safety project initiated by the Montana Department of Transportation (MDT) to address a crash trend. The Proposed Action is the reconstruction and widening of approximately one mile of roadway and a bridge on US 191. The Preferred Alternative improves roadway geometry with a projected reduction in crashes of approximately 36%.



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Technical Reports

Biological Resource Report and Biological Assessment for 2001 Grayling Cr – N of US 20
(STPHS 50-1(20)10; CN 5026), Garcia and Associates (GANDA), February 2007

Cultural Resource Inventory and Assessment, Grayling Creek – North of US 20 (STPHS 50-1(20)10; CN 5026), Frontier Historical Consultants, June 2004



Metric Conversion/Abbreviations and Acronyms

In accordance with recent Executive Orders and Secretary of Commerce direction, Federal Highway Administration and supporting agency plans are presented in metric units. This document, where appropriate, will reflect both English and metric units side by side to assist the reader. The metric unit is shown first, followed by the English unit in parentheses. For example: 13.7 km (8.5 mi). The following shows the conversion factors and units used in this document:

| <u>Metric Units</u> | <u>English Units</u> | <u>Conversion Factor (Metric to English)</u> |
|---------------------|----------------------|--|
| Centimeter (cm) | inch (in) | 0.3937 |
| Meter (m) | foot (ft) | 3.2808 |
| Kilometer (km) | mile (mi) | 0.6214 |
| Hectare (ha) | acre (ac) | 2.471 |

Abbreviations and Acronyms

| | | |
|-------|-------|--|
| ± | ..... | Approximately |
| ac | ..... | acre(s) |
| ACHP | ..... | Advisory Council on Historic Preservation |
| BLM | ..... | Bureau of Land Management |
| BRR | ..... | Biological Resource Report |
| CADD | ..... | Computer Aided Design and Drafting |
| cm | ..... | centimeter(s) |
| COE | ..... | U.S. Army Corps of Engineers |
| DEQ | ..... | Department of Environmental Quality |
| DNRC | ..... | Department of Natural Resources and Conservation |
| EA | ..... | Environmental Assessment |
| EO | ..... | Element Occurrence |
| ESA | ..... | Endangered Species Act |
| ft | ..... | foot (feet) |
| GPS | ..... | Global Positioning System |
| ha | ..... | hectare(s) |
| Hwy | ..... | Highway(s) |
| in | ..... | inch(es) |
| km | ..... | kilometers(s) |
| LOS | ..... | Level of Service |
| m | ..... | meter(s) |
| mi | ..... | mile(s) |
| MDEQ | ..... | Montana Department of Environmental Quality |
| MDT | ..... | Montana Department of Transportation |
| MFWP | ..... | Montana Fish, Wildlife, and Parks |
| MNHP | ..... | Montana Natural Heritage Program |
| MPDES | ..... | Montana Pollution Discharge Elimination System |
| MRIS | | Montana Rivers Information System |
| NRCS | | Natural Resources Conservation Service |



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NRHP National Register of Historic Places
SHPO State Historic Preservation Office
T/E Threatened and Endangered
USFS United States Forest Service
USFWS United States Fish and Wildlife Service
USGS United States Geological Survey
YNP Yellowstone National Park



1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 Project History

The Grayling Creek bridge is located approximately 16 kilometers (km; 10± miles [mi]) north of West Yellowstone, Montana within the Gallatin National Forest. The bridge, located on an approximately 1.6 km (1± mi) long s-curve of US 191, was built in 1932 and widened in 1963. In 1992, the portion of US 191 on this s-curve between reference post (RP) 9.6± and RP 10.5± was identified as a crash-cluster location. Curve signs and chevrons were installed in 1993 to address this issue. In 2001, the portion of US 191 between RP 9.7± and RP 10.7± was identified as a truck crash-cluster location and proposed for a safety improvement project.

Much of US 191 through the Gallatin Canyon is currently part of the Montana Department of Transportation's (MDT's) Safety Engineering Improvement Program (SEIP). In 1994, safety improvements were planned for the portion of US 191 between RP 8.3± and RP 70.2±. The first phase included signing, delineation, and guardrail, which was completed in October of 1998. Additional improvements, including spot widening, slope flattening, and turn lanes are pending and may be funded with National Highway funds and Highway Safety Improvement funds. Though the s-curve near Grayling Creek bridge is within the limits of this ongoing Gallatin Canyon project, all improvements at Grayling Creek would be made as part of the Proposed Action documented in this Environmental Assessment (EA) and not as part of the Gallatin Canyon safety improvement project.

The original Grayling Creek safety improvement proposal was limited to a new, wider bridge with signing and flashers. Following further analysis and a field review by MDT staff, realignment and reconstruction were recommended to address geometric issues at the curve.

1.2 Proposed Action

This proposed project is a highway safety project initiated by MDT to address a crash trend located near the bridge crossing Grayling Creek on US 191. The proposed project would include reconstruction of up to 1.6 km (1± mi) of roadway and replacement of the existing bridge crossing, along with any necessary signing and striping upgrades.

1.3 Proposed Project Area Description

The proposed project is located in Gallatin County on US 191, 16± km (10± mi) north of West Yellowstone within the following legal description:

| <u>Township</u> | <u>Range</u> | <u>Section</u> |
|-----------------|--------------|----------------|
| 12 S | 5 E | 10 |

As illustrated in Figure 1-1, the proposed project would begin at RP 9.7± and extend north approximately 1.6 km (1.0± mi) to the Yellowstone National Park (YNP) boundary (RP 10.7±).



The project is located entirely on National Forest System lands. On the southern end of the project, there is some private property with residences to the southwest of the road. The terrain is mountainous in the vicinity of the proposed project.

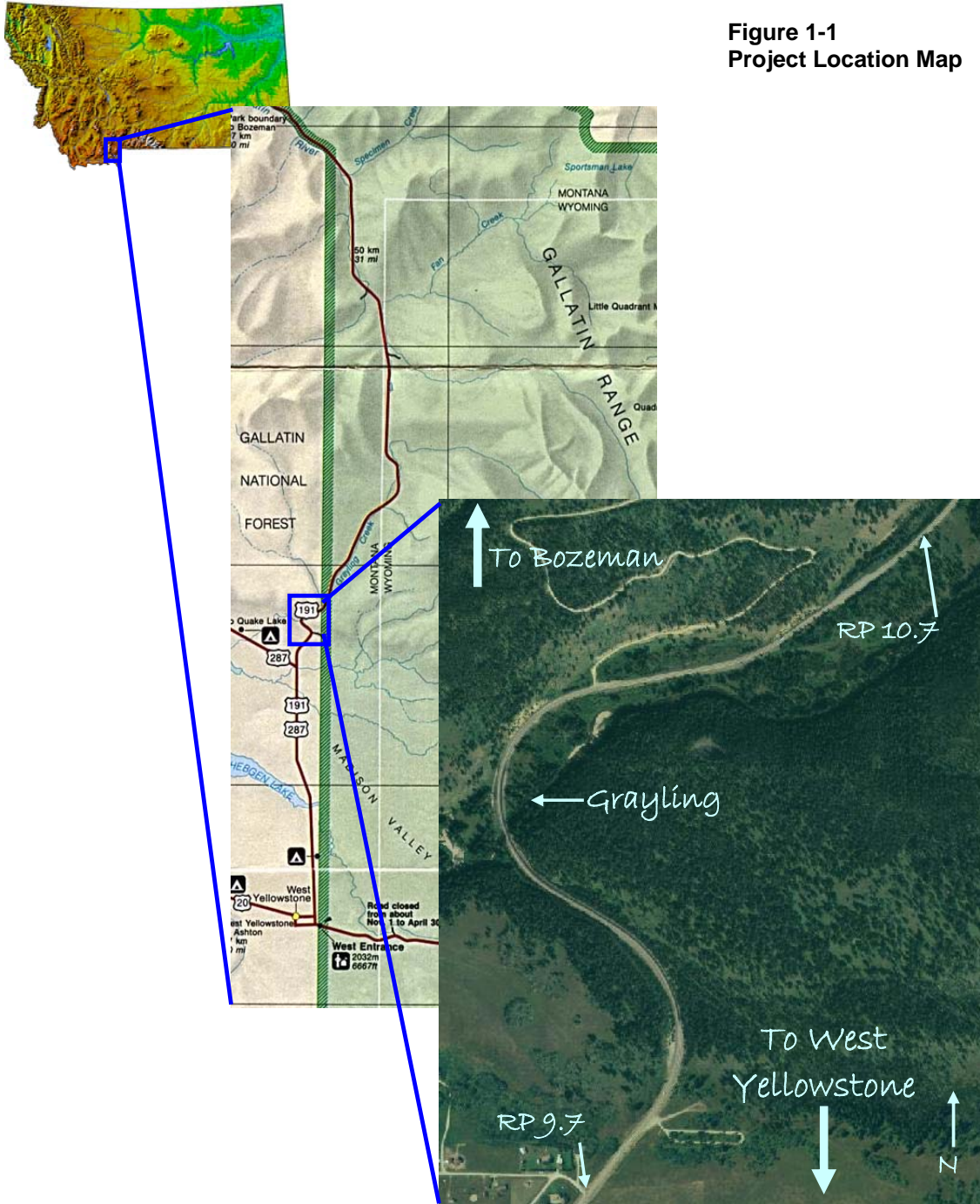


Figure 1-1
Project Location Map



The Average Daily Traffic (ADT) in 2006 was 1,850 vehicles, and is estimated to reach 4,230 vehicles by the design year of 2030. Just over 20 percent of this traffic is estimated to be commercial truck traffic.

The posted speed limit within the proposed project area is 70 miles per hour (mph); however, the curve near the creek crossing has a lower advisory speed with warning signs and chevrons.

1.4 Purpose of the Proposed Action

The Purpose of the proposed project is to improve safety within the identified crash cluster areas.

1.5 Need for the Proposed Action

As Table 1.1 shows, the portion of US 191 between RP 9.7± and RP 10.7± has more than seven times the average severity rate for rural non-interstate national highways for all crashes. It has over four times the average crash rate and an above-average severity index as compared to rural non-interstate national highways throughout the state. Most of these crashes occurred on icy or snow-covered roads and over 50 percent occurred at night. The vast majority (nearly 90 percent) of the crashes in the study area occurred between RP 9.8± to RP 10.4±, centered on the curve that crosses Grayling Creek.

Table 1.1
Crash History Comparison

| | Rural NHS* Non-Interstate (2001-2005) | RP 9.7± to RP 10.7± (1/1994-6/2006) | RP 9.8± to RP 10.4± (1/1994-6/2006) |
|--|--|--|--|
| Total Number of Crashes | 13,015 | 39 | 35 |
| Total Number of Crashes Involving Trucks | 1142 | 5 | 5 |
| Percentage of Crashes Involving Trucks | 8.77% | 12.8% | 14.3% |
| All Vehicles Crash Rate | 1.17 | 5.44 | 6.61 |
| All Vehicles Severity Index | 2.29 | 3.67 | 2.46 |
| All Vehicles Severity Rate | 2.69 | 19.96 | 16.26 |
| Snow, Slush, and Ice Conditions at Time of Crash | 22.3% | 84.6% | 82.9% |
| Dark at Time of Crash | 36.0% | 51.3% | 51.4% |

Source: Montana Department of Transportation

*NHS = National Highway System



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2.0 ALTERNATIVES

This chapter describes the alternatives that were developed for the proposed Grayling Creek project, explains which ones were retained based on their ability to meet the Purpose and Need, and describes alternatives that were eliminated from further evaluation.

2.1 Development of Alternatives

In the development of the alternatives, MDT attempted to satisfy the highest design criteria given the area's natural terrain. The surrounding terrain is classified as mountainous according to MDT design criteria, but the roadway has a posted speed that corresponds more with a rolling terrain design speed. Table 2.1 provides a description of the mountainous and rolling terrain design criteria.

Table 2.1
MDT's Design Criteria as Applied to Grayling Creek Alternatives

| | Mountainous Terrain | Rolling Terrain |
|---------------------------------|---------------------|---------------------|
| Design Speed | 80 km/hr (50± mph) | 100 km/hr (60± mph) |
| Minimum Stopping Sight Distance | 120 m (385± ft) | 160 m (513± ft) |
| Minimum Horizontal Radius | 230 m (755± ft) | 395 m (1,296± ft) |
| Maximum Grade | 7% | 4% |
| Superelevation | 8% | 8% |

Without substantial changes to the alignment and grade of the roadway in this corridor, it is not possible to fully meet the rolling terrain design criteria. This is true for both grade and curve radius. The development of alternatives focused instead on efforts to improve safety with cost-effective improvements to the existing roadway.

Several alternatives were considered at a highly conceptual level early in the project development process to determine whether substantive safety improvements could be made within the proposed project area through signage, roadway widening, lengthening curves, or alignment shifts. The original range of alternatives consisted of minor adjustments to the same general alignment concepts. Due to the similarity in the concepts, only those which showed the greatest potential for safety improvements in relation to overall cost were developed to more detail for analysis in the EA. The alignments of the five Build Alternatives that were ultimately developed are shown in Figure 2-1. In addition to these five alternatives, two other new alignments were explored at a conceptual level to see if reconstruction in different terrain would provide safety improvements and were determined to be cost prohibitive or to present constructability issues far exceeding other reasonable alternatives. These options are shown in gray in Figure 2-1. The seven alternatives forwarded for comparison are detailed below.

- The **No-Build Alternative** would maintain the existing conditions along the length of the project corridor by providing routine maintenance. The existing route has an



approximately 9.75 m (32± ft) wide roadway, and narrows to approximately 8.5 m (28± ft) across the bridge. The minimum horizontal radius on the existing curve is 251± m (823± ft) and the maximum grade is 5.90 percent. The existing bridge length is 32± m (105± ft).

- The **Warning Signs Alternative** would maintain the existing conditions of the roadway but would add curve warning signage, a flasher assembly, and new chevrons to the proposed project area.
- **Alternative A** is shown in white in Figure 2-1 and is a two-lane route that follows the existing alignment. This Alternative would increase the existing roadway width to approximately 12 m (40± ft) while essentially remaining on the same centerline as the existing alignment. The bridge length would increase to approximately 44 m (144± ft) because the curve radius increases and grade decreases. Alternative A would provide very slight improvements to the curve radius (by 2± m [7± ft]) and maximum vertical grade (to 5.70 percent). Because this alternative would be reconstructed along the same alignment, a construction detour and work bridge would be required, resulting in larger construction impacts.
- **Alternative B** is a two-lane route to the east of the existing alignment shown in yellow in Figure 2-1. It would increase the roadway width to approximately 12 m (40± ft). This alignment was developed with the intent of increasing the curve radius as much as possible given the terrain and other constraints, and maximizing the horizontal curve radius (305± m [1000± ft]). The maximum vertical grade would also be improved to 4.5 percent from the existing 5.90 percent. The bridge length would be approximately 48 m (157± ft).
- **Alternative C** is a two-lane route to the east of the existing alignment shown in maroon in Figure 2-1. It would increase the roadway width to approximately 12 m (40± ft). This Alternative was developed with the intent of minimizing the vertical grade. The vertical grade would be decreased to four percent with Alternative C and the horizontal curve radius would be improved slightly to 280± m (918± ft), resulting in a bridge length of approximately 58 m (190± ft).
- **Alternative D** is a two-lane split route utilizing the Alternative C alignment for the northbound direction of travel and a second alignment immediately west for the southbound direction of travel. The route would be split into two alignments shown in maroon and blue in Figure 2-1, each with a paved roadway width of approximately 7.2 m (24± ft). The bridge lengths would be approximately 58 m and 44 m (190± ft and 144± ft, respectively). Alternative D was developed to minimize the incidence of head-on vehicle collisions by segregating traffic on separate facilities. The maximum vertical grade for Alternative D would be approximately four percent and the minimum horizontal radii are 265± m (869± ft) for the northbound and 280± m (919± ft) for the southbound alignments.



- **Alternative E** is a two-lane route to the east of the existing alignment shown in orange in Figure 2-1. Like other alternatives, it would increase the roadway width to approximately 12 m (40± ft). The maximum vertical grade would be just under six percent and the minimum horizontal radius would be 264± m (866± ft). The corresponding bridge length would be 40± m (132± ft). Alternative E differs from other alternatives by reconstructing a smaller portion of the existing alignment in the area where almost 90 percent of crashes have been recorded, between MP 9.8± and MP 10.4±. This reconstruction concept is based on a crash model's prediction that making the roadway wider, adding spiral curves, including flatter side slopes, and wider clear zones could improve roadway safety at a minimal cost compared to other alternatives that focus on meeting design standards.

As noted in the description above, none of the alternatives developed could satisfy all of the design criteria for rolling terrain, but all forwarded Build Alternatives improve both the horizontal and vertical alignments to some degree. Alternative A is intended to improve grades and straighten curves as much as possible while remaining on the existing centerline. Alternative B straightens the curves as much as possible and Alternative C minimizes the vertical grades. Alternative D also minimizes the vertical grade on one of the alignments, while providing the safety benefit of separating traffic. Alternative E uses crash analysis to identify an alignment that maximizes safety while minimizing cost. Alternative E results in a shorter bridge, less earth work, and a shorter segment for reconstruction.

2.2 Alternatives Evaluation Process

The Alternatives were compared to one another using a crash forecasting model, by the additional footprint of each alternative, and through a cost-benefit analysis. Table 2.2 shows the results of this screening process.

Crash forecasting in Table 2.2 was based on a model accepted by the Federal Highway Administration (FHWA) called the "Substantive Safety Approach." According to the ITE Traffic Safety Toolbox Introduction, Substantive Safety is the expected or actual crash frequency and severity for a highway or roadway which is different from the Nominal Safety which is examined in reference to compliance with standards, warrants, guidelines and sanctioned design procedures. The Substantive Safety Approach allows departments of transportation to evaluate design alternatives quantitatively while in the design phase. The "Substantive Safety Approach" applies safety research results to design decisions. The model takes curvature, lane width, shoulder width, grade, and intersection into account while applying accepted American Association of State and Highway Transportation Officials (AASHTO) standards. Several states use the "Substantive Safety Approach," including Iowa, New York, Minnesota, and Illinois.



Figure 2-1
Grayling Creek Alternatives

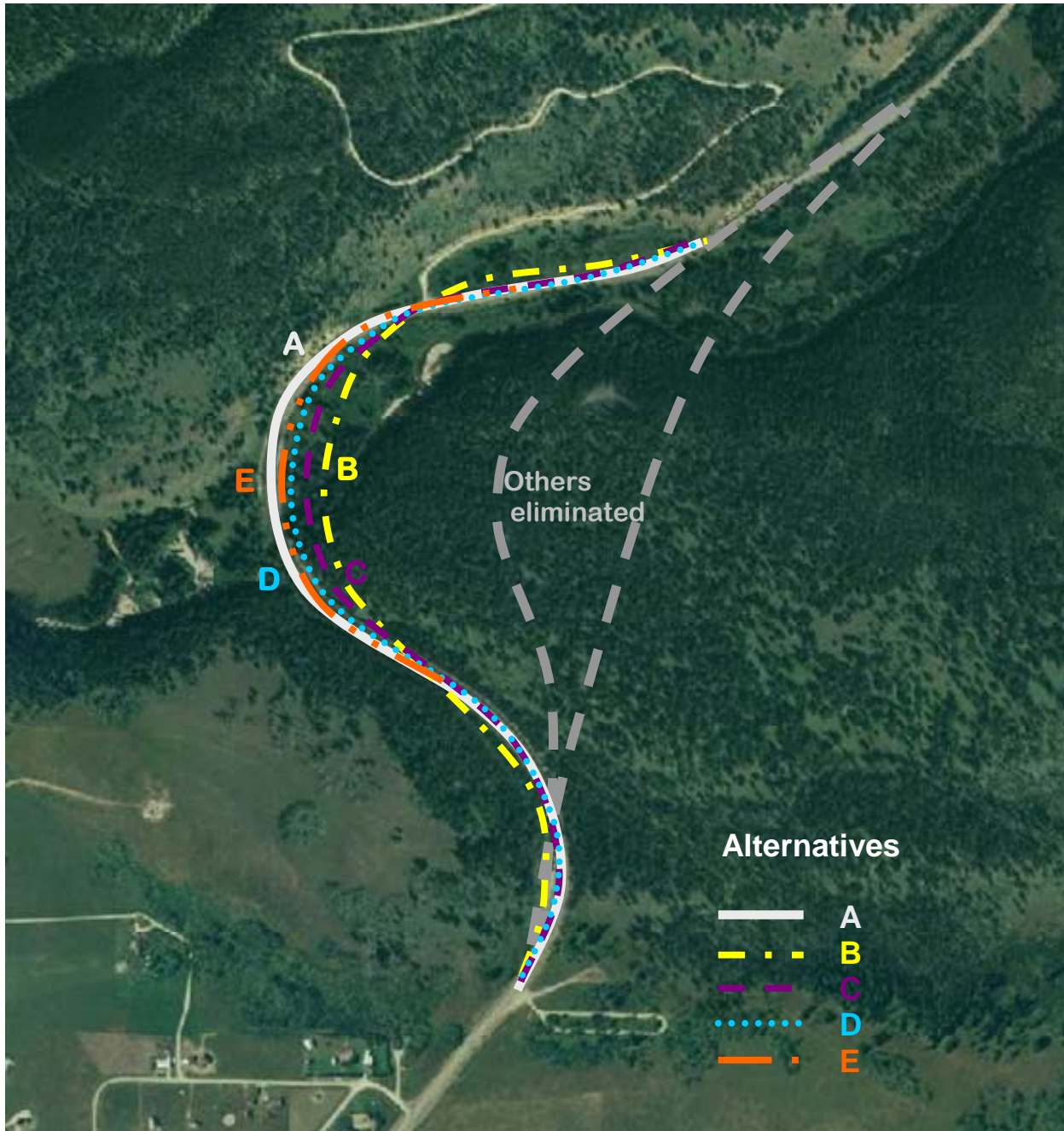




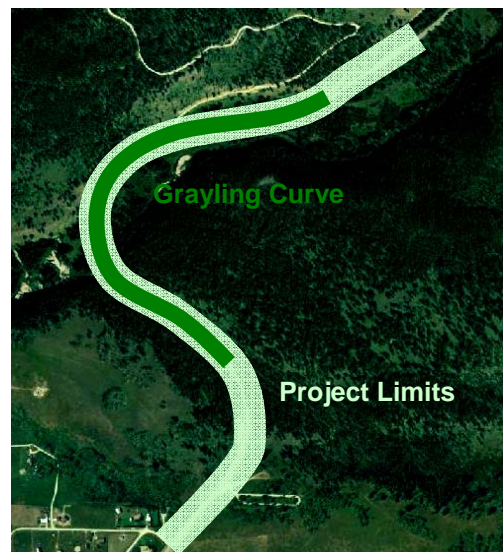
Table 2.2
Alternative Comparison

| Criteria | | No Build | Alternative A | Alternative B | Alternative C | Alternative D | Alternative E |
|--|---|-----------------|-----------------|-----------------|----------------|--|------------------|
| Safety | | | | | | | |
| | <i>Crash Forecast (5yrs) for 5200 ADT for entire project area</i> | 22 | 16 | 16 | 16 | 16 | 19 |
| | <i>Reduction in Crashes (%) for entire project area</i> | 0% | 26% | 27% | 27% | 28% | 16% |
| | <i>Crash Forecast (5yrs) for 5200 ADT for Grayling Curve only</i> | 8 | 5 | 5 | 5 | 6 | 5 |
| | <i>Reduction in Crashes (%) for Grayling Curve only</i> | 0% | 35% | 36% | 38% | 32% | 36% |
| Bridge Design | | | | | | | |
| | <i>Roadway Width</i> | 9.75 m (32± ft) | 12 m (40± ft) | 12 m (40± ft) | 12 m (40± ft) | 14.4 m (48± ft) | 12 m (40± ft) |
| | <i>Approximate Bridge Length</i> | 32 m (105± ft) | 44 m (144± ft) | 48 m (157± ft) | 58 m (190± ft) | 58 m (190± ft) and 44m (144± ft) (two bridges) | 40 m (132± ft) |
| Additional Footprint (ha) | | 0 | 6.4 ha (16± ac) | 6.4 ha (16± ac) | 6 ha (15± ac) | 6.4 ha (16± ac) | 1.8 ha (4.6± ac) |
| Construction Cost (millions of dollars) | | -- | \$5.6 | \$6.2 | \$5.1 | \$5.6 | \$2.5 |
| Benefit/Cost Ratio | | n/a | 0.29 | 0.28 | 0.34 | 0.32 | 0.90 |

All Build Alternatives meet the Purpose of improving safety based on their forecast ability to reduce crashes. The safety analysis presented in Table 2.2 demonstrates that Alternatives A through D are projected to reduce crashes 26 to 28 percent over the entire proposed project area, while Alternative E is projected to result in a decrease of just 16 percent over the entire proposed project area. However, when comparing projected safety improvements in the Grayling Curve area (see Figure 2-2), Alternative E could be anticipated to provide a similar reduction in crashes while reconstructing a much shorter segment of the roadway.

The bottom portion of Table 2.2 discusses the construction footprint and costs of the various alternatives. Because the proposed project would be in a riparian area, the potential for impacts to wetlands and other biological resources merits

Figure 2-2
Grayling Curve





consideration of the additional footprint that would be required for each alternative. The No-Build and the Warning Signs Alternatives would not require any additional footprint. Alternatives A through D would all require approximately $6.0\pm$ to $6.4\pm$ additional hectares ($15\pm$ to $16\pm$ additional acres) of footprint. Alternative E has a small additional footprint compared to the other Build Alternatives of less than two hectares (less than five acres).

Alternative E has the highest benefit-cost ratio of all of the Build Alternatives by a factor of three. Its ratio approaches, but is not above, one. However, when viewed as a bridge reconstruction project with a service life of 50 years, it has a benefit/cost ratio of 2.38.

2.3 Alternatives Eliminated from Further Evaluation

Based on Alternative E's ability to satisfy the Purpose and Need by reducing crashes in the vicinity of the Grayling Curve; its relatively smaller footprint, which would reduce potential biological resources and wetland impacts; and its ability to do so with a higher benefit/cost ratio than the other Build Alternatives, Alternatives A, B, C, and D were eliminated from further evaluation and will not be discussed further in this document.

The Warning Signs Alternative has also been eliminated as a stand-alone alternative due to its relatively low ability to satisfy the Purpose and Need for safety improvements in this corridor as compared to other alternatives. The placement of warning signs has a good benefit/cost ratio, but is projected to have only a minor effect (zero to ten percent) on crash reduction compared to other alternatives. It is possible, however, that this option could be included with the proposed Build Alternative to further enhance any projected safety improvements.

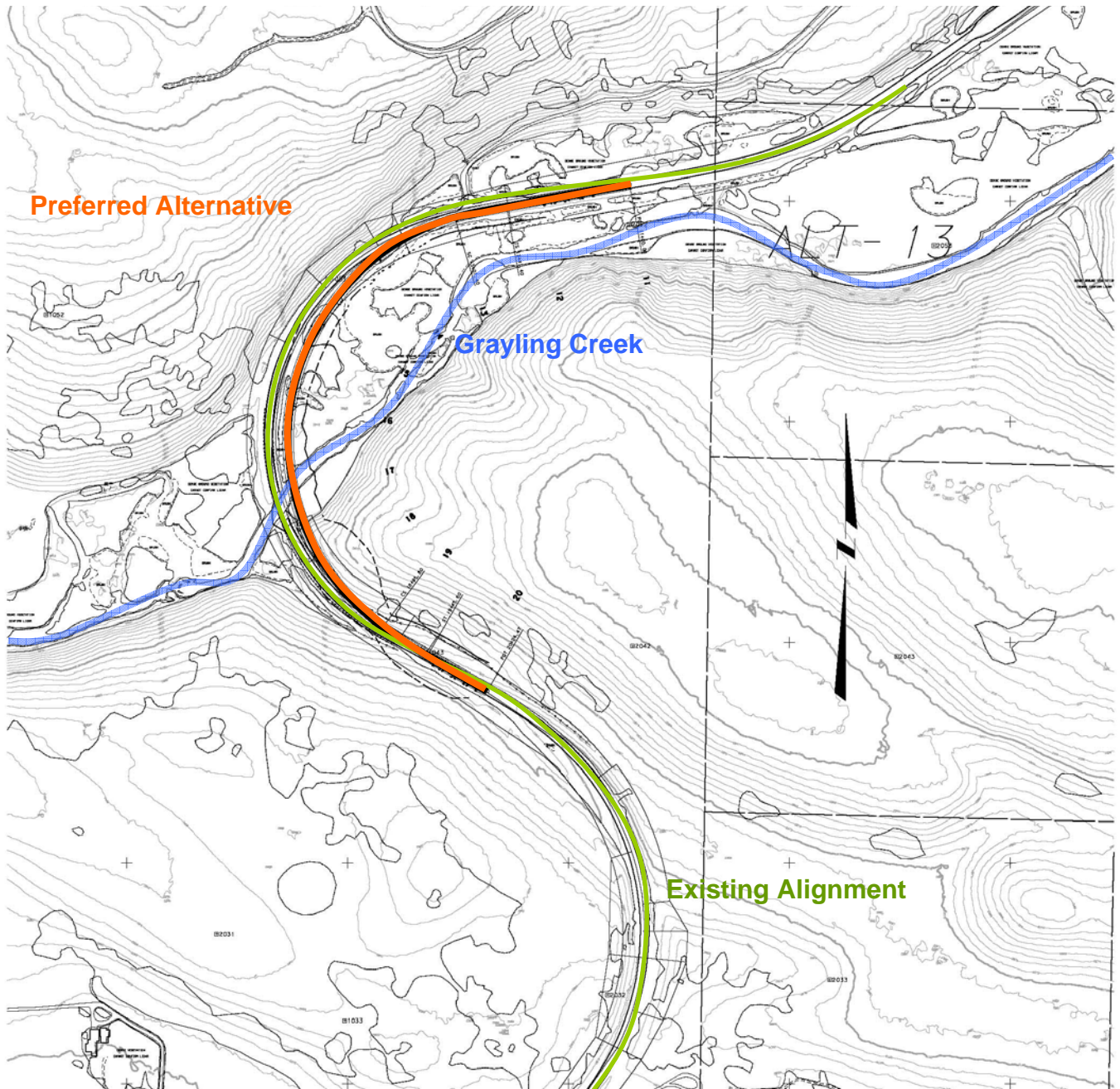
Other conceptual alignments were originally considered that would have taken a new alignment across the knob east of Grayling Creek (See Figure 2-1). These options were substantially higher in cost, presented constructability concerns greatly exceeding other alignment options, and were also eliminated from further consideration.

2.4 Identification of the Preferred Alternative

Alternative E has been selected as the Preferred Alternative due to its ability to satisfy the Purpose and Need of the proposed project, while minimizing impacts compared to other alternatives. Alternative E has a projected cost of \$2.45 million, less than half the cost of the other Build Alternatives. The lower cost of the Preferred Alternative will allow a project funding package to be developed sooner than the other Build Alternatives; therefore, the traveling public will realize the benefit of the safety improvement earlier than the other Build Alternatives. Alternative E is illustrated in more detail in Figure 2-3.



Figure 2-3
Alternative E (Preferred Alternative)





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3.0 IMPACTS AND MITIGATION

This chapter contains information on potential social, economic, and environmental resource impacts due to the Proposed Action. This information was developed in cooperation with state and federal agencies and members of the general public. The National Environmental Policy Act (NEPA), the Montana Environmental Policy Act (MEPA), and the FHWA Technical Advisory (T6640.8A) outline specific areas of environmental concern to be addressed through environmental analysis. Resources evaluated and found to have no impacts include:

- Parks and Recreation/NL&WCF – Section 6(f) Lands, and Section 4(f) properties
- Pedestrians and Bicyclists
- Farmlands
- Environmental Justice
- Economic Conditions
- Hazardous Waste
- Noise
- Air Quality

The following sections provide a description of those resources where impacts are anticipated.

3.1 Land Use / Right-of-Way and Easements / Utilities

Land Use

The proposed project lies entirely within Gallatin National Forest. The immediate project area is dominated by evergreen forests and mountainous terrain. Grayling Creek runs from the northeast to the southwest through the proposed project area before it discharges into Hebgen Reservoir. The area is used primarily for recreation and natural habitat.

West Yellowstone is approximately 16.1 kilometers (ten miles) to the south of the proposed project area and Bozeman is approximately 128.7 kilometers (80 miles) to the north. There is a residential development a little over 1.6 kilometers (one mile) south of the proposed project area. The proposed project area is adjacent to Yellowstone National Park.

Right-of-Way and Easements

All lands needed for construction of the Proposed Action are public lands administered by the US Forest Service (USFS). Right of way in the form of an easement would need to be obtained from the FHWA and consented to by the USFS for the proposed widening and realignment. Timber within any easement on National Forest System lands would remain the property of the United States.



Utilities

No utilities have been observed within the proposed project area. No utility relocations are anticipated.

Mitigation

Neither the No-Build nor the Preferred Alternative would have any substantive impact on the location, distribution, density, growth rate of the area's population, or existing recreation opportunities. No mitigation is required.

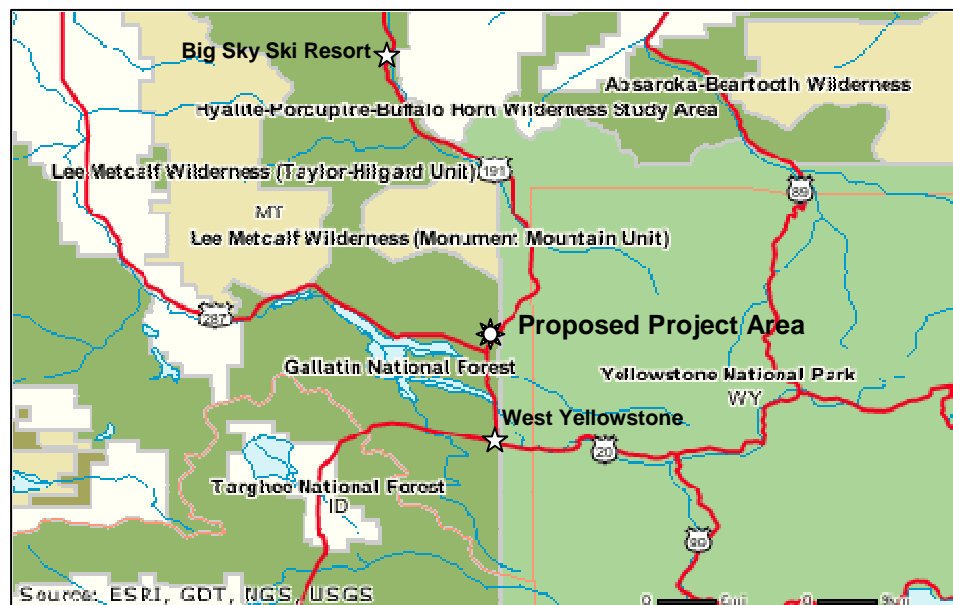
Right-of-way in the form of an easement will be issued by the FHWA and consented to by the USFS. The disposition of timber on the easement will be included in the Letter of Consent stipulations.

3.2 Social

This section describes general community characteristics as well as park and recreational opportunities found near the proposed project area.

The proposed project area is uninhabited, but US 191 carries traffic to surrounding and nearby recreation areas. As shown in Figure 3-1, US 191 is one of three routes used to access Yellowstone National Park's West Entrance, south of the proposed project area. The Park receives over three million visitors per year. Gallatin National Forest does not keep visitor statistics but its recreational opportunities draw visitors on a year-round basis. West Yellowstone, south of the proposed project area, is a destination for snowmobilers in the winter and serves as lodging for Yellowstone National Park visitors in the summer. Big Sky Resort is north of the proposed project on US 191 and draws tourists on a year-round basis.

**Figure 3-1
Area Recreation Map**





There is high snowmobile use in the area and there is a formal trail crossing the existing road. Based on state law recognizing safety concerns, snowmobiles would be prohibited from using the roadway and bridge as a travel route. Snowmobile crossings of the highway will still be permitted.

In their correspondence in August 2006, the US Forest Service requested that a parallel snowmobile trail be constructed immediately west of the new bridge and roadway alignment in the proximity of the old (existing) roadbed. This can be accomplished by returning the existing roadway to a natural contour that would accommodate snowmobile travel in the winter. The US Forest Service also considered requesting that the old bridge be left in place, but in their letter requested that a new bridge be constructed for snowmobile use. MDT does not feel that a new bridge crossing for snowmobiles can be justified with this project based on additional impacts to wetlands, floodplains, and surrounding habitat, as well as the additional cost. MDT would support the construction of an ice crossing as discussed previously with the US Forest Service.

Travel/Access

Overall, the Proposed Action would enhance highway operation and safety. While no existing access will be changed by this proposed project, parking along the route – particularly near the curve – is unsafe and illegal, and will not be permitted in the future.

Mitigation

No mitigation is required.

3.3 Floodplains

Though there is a floodplain associated with Grayling Creek, there is no delineated/mapped National Flood Insurance Program (NFIP) floodplain in the proposed project area. The bridge structure built as part of the Preferred Alternative must take potential flood risk and the benefits of natural functioning floodplains into account, in accordance with 23 CFR 650A.

Mitigation

As part of the design effort, a location study will be prepared and will include evaluation and discussion of the practicability of alternatives to any longitudinal encroachments on floodplains. For this proposed project, the location study will likely include discussion of the following items:

- The risks associated with implementation of the action,
- The impacts on natural and beneficial flood-plain values,
- The support of probable incompatible flood-plain development,
- The measures to minimize flood-plain impacts associated with the action, and
- The measures to restore and preserve the natural and beneficial flood-plain values impacted by the action.



Final design will need to balance considerations of such factors as bridge span length, wildlife and recreational clearances, hydraulic needs, and cost. The bridge will be designed in accordance with MDT's design frequency guidelines, while evaluating the potential flood hazards associated with the 100 year event. No other mitigation is required.

3.4 Wetlands

Impacts to wetlands are regulated by Section 404 of the Clean Water Act, Executive Order (EO) 11990 ("Protection of Wetlands"), and EO 11998 ("Floodplain Management"). EO 11998 requires federal agencies to take floodplain management into account when formulating or evaluating any water and land use plans. The U.S. Army Corps of Engineers (COE) is the primary regulating agency in Montana. Under both the COE and EPA regulations (33 CFR 328.3 and 40 CFR 230.0), the term "wetlands" means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

All wetland delineations were conducted following the Routine COE Method outlined in their 1987 manual. A Trimble GeoXT GPS unit was used to delineate the extent of each potential wetland area. Wetlands areas 1 through 3, 5, and 8 through 11 are shown in Figure 3-2. Wetlands areas 4, 6 and 7 are not shown because they are located outside the study area.

The Preferred Alternative may impact small portions of Wetlands 1, 3, 5, 8, 10, and 11, depending on final design, as shown in Figure 3-2.

Table 3.1
Delineated Wetland Acreages Potentially Impacted by the Preferred Alternative

| Wetland ID | MDT Wetland Category | Total Delineated Area ha (ac) |
|----------------------|----------------------|----------------------------------|
| 1 | II* | 0.004± ha (0.01± ac) |
| 3 | II* | 0.004± ha (0.01± ac) |
| 5 | II* | 0.008± ha (0.02± ac) |
| 8 | II* | 0.07± ha (0.18± ac) |
| 10 | III** | 0.01± ha (0.03± ac) |
| 11 | III** | 0.004± ha (0.01± ac) |
| Total acreage | | 0.11± ha (0.26± ac) |

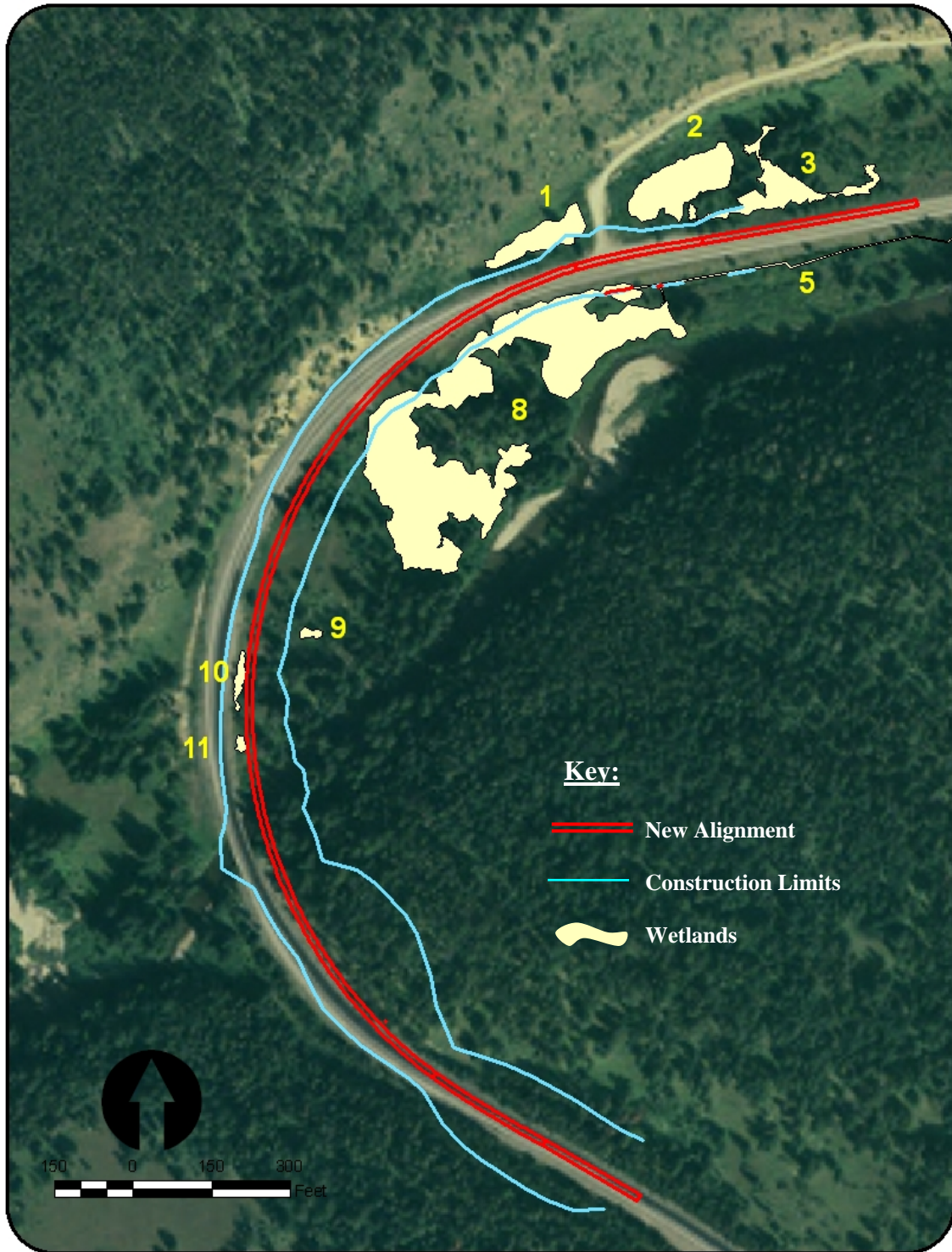
Source: *Biological Resources Report, Garcia and Associates, 2006*

*II – Category II provides good quality habitat for sensitive plants or animals. These wetlands function at very high levels for fish, wildlife habitat, or are unique for a given region, or are assigned high ratings for many of the assessed functions and values. The total actual functional points for a Category II wetland must total 65% or greater of the possible.

**III – Category III are more common and generally less diverse, and often smaller and more isolated than Category II wetlands. Category III wetlands can provide many functions and values, but will not have a high rating as a Category II. The total actual functional points for a Category III wetland must total 30% or more of the possible.



Figure 3-2
Wetland Areas Map





Mitigation

Projected impacts to wetlands are estimated to be less than 0.2 hectares (0.5 acres). A Nationwide Clean Water Act 404 permit will be obtained if required. To the extent practicable, impacts to wetlands will be avoided or minimized. Compensatory mitigation, if required, will be on-site or at a reserve in Watershed 06 - Upper Missouri. Given the level of impact anticipated, it is likely that compensatory mitigation can be achieved at an existing reserve within the Madison River drainage (Watershed 10020007- Jack Creek Ranch).

3.5 Water Quality

The Montana Department of Environmental Quality (DEQ) is required by Section 303(d) of the Clean Water Act to identify and prioritize those waters for which total maximum daily loads (TMDLs) are needed. These loads are an assessment of the amount of pollutant a water body can receive and not violate water quality standards. The TMDL determines how much “pollutant load” a lake or stream can assimilate. Grayling Creek is not on the TMDL list and is not a water body for which a TMDL has been developed.

In general, there would be an increase in the total surface area of paved road related to widening and reconstruction under the Preferred Alternative. The increase in total road surface area decreases the overall permeability of substrate and increases the rate and quantity of surface water runoff from the roadway. Although minor, the increased surface water runoff and removal of vegetation has increased potential for erosion, transport of dissolved and particulate contaminants, and for sedimentation.

The quality of runoff from roadways is impacted by vehicle-related contaminants, such as motor oil, grease, and tire rubber. In addition, surface water runoff is impacted by herbicides and pesticides that may be used in landscaped or maintained areas along the highway.

More rigorous standards would be met (e.g., with respect to grade, surface water runoff controls, sedimentation, and erosion control), and impacts to surface water quality due to erosion and siltation would be reduced. Through the use of BMP's, the Preferred Alternative would likely not adversely impact water quality, and in fact may improve the quality of stormwater runoff relative to existing conditions.

Mitigation

The Preferred Alternative may impact water quality through storm water runoff and erosion. Mitigation of these impacts is achieved through engineering controls such as the use of erosion and sediment control features, revegetation, as well as other Best Management Practices (BMP's). The Preferred Alternative would require a Storm Water Pollution Prevention Plan (SWPPP) and field monitoring/oversight to minimize temporary impacts to water quality due to construction. If material exceeding allowable limits did enter Grayling Creek during construction, it would be removed in coordination with state and federal water quality regulations.



The new bridge over Grayling Creek would be designed in coordination with appropriate resource and permitting agencies.

3.6 Waterbodies, Wildlife Resources, and Habitat

The Biological Resources Report (BRR) prepared for the proposed project provides a detailed accounting of the terrestrial and aquatic species, and species of concern that are known to occur or could occur within the proposed project area. The information below is a summary of potential impacts and mitigation measures for biological resources.

As impacts and mitigation for wildlife are considered, it is important to understand the level of design conducted to date and how future design decisions will be made. At this stage, MDT does not have detailed design work completed for this proposed project, but as the project progresses (if approved) the roadway embankments, bridge size and type will need to balance impacts and constraints represented by animal crossings with the functional design and costs of the roadway and bridge structure. Increasing the vertical clearance of the structure for animal passage underneath requires a longer bridge and larger embankment footprint on surrounding wetlands. Clear spanning the creek to minimize stream impacts would require a deeper superstructure on the bridge that would decrease vertical clearance for wildlife passage underneath. A multi-span bridge structure would increase the vertical clearance for wildlife passage, but would require piers in the creek. MDT will coordinate these issues with USFS and other Resource Agencies as the design progresses.

Wildlife Resources

General wildlife species occurring in the proposed project area were identified by state and federal agency consultation, species sighted during field visits, and data on wildlife and vehicle collisions were collected by MDT and law enforcement agencies.

According to the BRR prepared for this proposed project, the proposed project area contains relatively high quality habitat for mammals, ungulates, birds, reptiles, and amphibians. Tracking studies by the USFS indicate high levels of large mammal activity in the vicinity of the proposed project and creek corridor, and have been confirmed by surveys and field observations conducted. During construction activity, more mobile species such as adult birds, elk, moose, large carnivores, and other mid-size to large mammals generally move to adjacent habitats to avoid direct mortality from construction activities. Temporary loss of nesting, foraging, and cover habitat may occur from temporary vegetation clearing for construction staging activities. Shrub and tree recovery depends on the plant species, and may take several years to become re-established along the new right-of-way. Grass and forbs would begin to recover immediately and re-establish over subsequent growing seasons.

Temporary project impacts may be offset by the availability of additional habitat(s) present in the surrounding Gallatin National Forest lands. These lands include riparian, wetland, and upland



habitats. Yellowstone National Park is located north and east of the proposed project area, and provides ample habitat similar to that found in the proposed project area.

Wildlife impacts may be lessened through bridge design. Vehicle speed, effects of the increase in ADT over time, and disruption of wildlife trails may be addressed by increasing bridge height and adding animal passage features, resulting in positive effects for general wildlife.

By maintaining the roadway generally along the existing alignment and providing steeper side slopes when appropriate, the Preferred Alternative minimizes impacts to habitat by minimizing the footprint of the roadway improvements, as compared to other alternatives.

Fisheries and Aquatic Resources

Grayling Creek is classified as “trout water” for its entire length by Montana Fish, Wildlife, and Parks (MFWP). According to the Montana Fisheries Information System (MFISH), on a scale of 1-6 with 1 being the best rating, Grayling Creek habitat was rated as 4 for much of its length, except for the headwater which was rated as 6 (poor or no data).

Aquatic habitat in the reach of Grayling Creek within the proposed project area is dominated by riffles and runs with cover provided by small pools and large woody debris. There is one large pool that encompasses approximately 25 meters (80 feet) of stream length, centered on the bridge. This pool is likely to provide good feeding habitat and cover for salmonids. The long riffle-run habitat upstream of the existing bridge has sections of steep and undercut banks which also provide good cover and resting areas for fish. Downstream of the existing bridge, the stream narrows and pool habitat is limited. According to the BRR prepared for this proposed project, Cutthroat trout use areas upstream of the existing bridge more frequently than other salmonid species. The gravels in the riffle area upstream of the bridge may serve as spawning habitat for westslope cutthroat trout in the spring to early summer months (May to June). The current bridge appears to have impacted sediment deposition and localized channel morphology; however, it does not appear to have degraded aquatic habitat.

Table 3.2 lists fish species documented in the proposed project area.

Table 3.2
Fish Species Documented in Grayling Creek near the Proposed Project Area

| Scientific Name | Common Name | Abundance in project area | Native? |
|------------------------------------|---------------------------|---------------------------|---------|
| <i>Oncorhynchus clarkii lewisi</i> | Westslope cutthroat trout | Abundant | Yes |
| <i>Prosopium williamsoni</i> | Mountain whitefish | Abundant | Yes |
| <i>Cottus bairdii</i> | Mottled sculpin | Abundant | Yes |
| <i>Oncorhynchus mykiss</i> | Rainbow trout | Rare | No |
| <i>Salmo trutta</i> | Brown trout | Abundant | No |
| <i>Salvelinus fontinalis</i> | Brook trout | Rare | No |
| <i>Oncorhynchus sp.</i> | Cutthroat-rainbow hybrid | Abundant | No |

Source: Biological Resources Report, Garcia and Associates, 2006



Indirect effects of the proposed project could include changes in instream habitat due to bedload and channel changes resulting from stream flow adjustments after the new bridge is completed.

Mitigation

Actions that prevent sedimentation and coordinate construction timing may prevent or reduce many of the direct and indirect impacts described above. These activities include those described under MDT's Standards and Specifications Section 107.11, titled "Environmental Protection," Section 208 titled "Water Pollution Control and Stream Preservation," and the requirements of the Montana Stream Protection Act (SPA 124). Instream timing restrictions are likely to be included as part of the Clean Water Act (CWA) Section 404 and SPA 124 regulatory processes.

Species of Concern

Plant Species

Information requested from the Montana Natural Heritage Program (MNHP) indicated slender Indian paintbrush, a vegetative species of concern, had been located within the proposed project area. MNHP records indicated no recorded sightings of other species of concern within 32± kilometers (20± miles) of the proposed project area. The MNHP rare plant guide was searched prior to field visits to determine what other species of concern are present in Gallatin County and the Gallatin National Forest that could have been present in the proposed project area. The BRR identified twenty potential species of concern, but based on a field review, the only sensitive species present in the proposed project area is slender Indian paintbrush.

Slender Indian paintbrush's habitat as observed and described by the MNHP consists of moist to saturated soils along willow-dominated creeks.

Direct impacts to slender Indian paintbrush include the removal of plants during construction. Potential indirect impacts may result from hydrologic alterations and the spread or introduction of noxious weeds. Cumulative impacts to hydrology may include an increase or decrease in soil moisture that may make the habitat unsuitable for this species. If the proposed project alters hydrology to increase the amount of moist, seasonally-saturated soil and increase the area of wet meadows, construction activities may benefit slender Indian paintbrush habitat.

Noxious weeds and invasive non-native species, particularly grasses, are present in the vicinity of slender Indian paintbrush. If these weedy species were left unmanaged (i.e., allowed to spread or increase their densities following construction) they may indirectly impact slender Indian paintbrush through crowding, shading, or increased competition, making habitat unsuitable. Impacts to slender Indian paintbrush from direct removal, altered hydrology, and weeds due to the construction will not impact the viability of the species regionally, but may reduce the viability of the species locally.



Animal Species

Table 3-3 lists all sensitive species potentially found in the proposed project area. Two sensitive species of particular interest to the USFS because of their potential to exist in the proposed project area are northern goshawk and boreal toad. Species specific surveys were performed for these two species.

Table 3.3
Sensitive Species With Potential to Occur Near the Proposed Project Area

| Common Name | Scientific Name | Status* | Habitat |
|----------------|----------------------------------|---------|--|
| Wolverine | <i>Gulo gulo</i> | S | Wide range of habitats for foraging, denning, travel, especially high elevation alpine habitats |
| Grizzly Bear | <i>Ursus arctos</i> | S | Wide range of habitats which varies between location, seasons, local populations, and individuals. |
| Bald Eagle | <i>Haliaeetus leucocephalus</i> | S | Prefer forested areas along major water bodies. |
| Trumpeter Swan | <i>Cygnus buccinator</i> | S | Prefer wooded ponds and rivers |
| Harlequin Duck | <i>Histrionicus histrionicus</i> | S | Favor extremely turbulent water |
| Boreal Toad | <i>Bufo boreas</i> | S | No breeding habitat, possible upland migration habitat present |

*T- Federally listed as Threatened; S - USFS listed as Sensitive; MIS - USFS listed as Management Indicator Species

Wolverines

Wolverines are managed by the USFS as a sensitive species. Wolverines use a wide range of habitats for foraging, denning, travel, especially high elevation alpine habitats. The wolverine is a highly mobile species and during construction activity wolverines will generally move to adjacent habitats to avoid direct mortality from construction activities.

Grizzly Bear

After nearly disappearing, in July of 1975 Grizzly bears were listed as federally threatened species in the contiguous United States. As a result of years of intensive cooperative recovery efforts between federal and state agencies, conservation groups, and individuals the grizzlies in the Yellowstone ecosystem have made a comeback and were delisted in April of 2007. Yellowstone grizzlies will continue to be managed under a comprehensive conservation strategy developed by state and federal scientists and managers to manage and maintain healthy grizzly bear populations throughout the Greater Yellowstone area.

The proposed project is located in high quality spring and fall riparian habitat within the Yellowstone Grizzly Bear Recovery Zone. Grizzly bear use in the proposed project area is high, and local, state and federal biologists have seen more sign of grizzly bears in the area than the other T/E species analyzed in the BRR. Six highway mortalities of grizzly bears have been documented on US 191 in or near the proposed project area since 1977.



Fir Ridge, slightly east of the proposed project area, has a high concentration of bears. Fir Ridge is an ecologically diverse area that serves as a travel corridor for bears traveling between Yellowstone National Park and Hebgen Lake, the Lee Metcalf Wilderness Area, Taylor Fork, the Taylor-Hilgard Mountains, and Tepee Creek, all located west of US 191. The Fir Ridge area also provides important spring food sources as grizzly bears emerge from hibernation. The southwest facing slopes are snow-free early in the spring, providing emergent vegetation. In addition, it is elk winter range, providing winter-killed elk carcasses. The GPS data from this study has documented the importance of Grayling Creek as a travel corridor for grizzly bears.

Several studies illustrate that road use by humans disrupts bear behavior and social structure, reduces the availability of adjacent foraging habitats, and creates barriers to movement. Traffic volume influences the width of the avoidance zone described above. Therefore the avoidance zones can be expected to increase in the proposed project area as Average Daily Traffic (ADT) increases over time. These findings indicate that, due to the presence of US 191, access to wetland and riparian habitat in the proposed project area may be increasingly limited as ADT increases. Although ADT levels will increase in this area regardless of the proposed project, current ADT levels have already reached the range at which road crossings become problematic for wildlife by causing habitat fragmentation and mortalities.

Direct mortality during project construction is not expected. Direct and indirect effects to grizzly bears may continue to include highway mortality after project construction. Grizzly bears may avoid the area during construction activities. No known dens currently exist in the area.

The Preferred Alternative would shift the curve and replace the existing bridge. The slightly larger footprint from highway and bridge widening may remove a small amount of wetland and riparian habitat, leaving the majority intact. Three culverts currently maintain the wetland hydrology in the study area, and if these connections are maintained then no change in the wetland community is expected to occur. Thus the Preferred Alternative may cause a small amount of habitat fragmentation.

The Preferred Alternative is not anticipated to impact existing wildlife trails, and grizzly bears would likely continue to use trails as they do now. The bridge design will take into account these potential impacts to wildlife passage, as well as consider the functional design and cost constraints of the proposed project.

Bald Eagle

The bald eagle was listed as a federally endangered species in 1967, and after successful management efforts, downlisted to threatened in 1995, and delisted in August 2007. Although considered a “recovered” species by the USFWS, bald eagles will continue to be protected by the Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act.

No direct, indirect, or cumulative effects on bald eagles are expected as a result of this proposed project.



Bald eagle use is not expected to occur in the proposed project area because Grayling Creek is a small, shallow creek that provides less suitable foraging and nearby nesting habitat for eagles than do other nearby tributaries and water bodies. The relatively short section of creek is obstructed by conifers and the bridge, making foraging undesirable for the large bird. It is possible that bald eagles may scavenge on road-killed carcasses. More suitable foraging habitat for eagles is found to the southwest of the proposed project area along Hebgen Lake and its surrounding tributaries such as Duck and Cougar Creeks.

Trumpeter Swan

Trumpeter swans are managed by the USFS as a sensitive species. Swans' preferred habitat includes wooded ponds and rivers. No impacts are anticipated to swans from the project because they are highly mobile and during construction activity will generally move to adjacent habitats to avoid direct mortality from construction activities.

Harlequin Duck

Harlequin ducks are managed by the USFS as a sensitive species. Harlequin ducks favor extremely turbulent water. There may be temporary disturbance of foraging and nesting habitat for harlequin ducks, but during construction activity they will generally move to adjacent habitats to avoid direct mortality from construction activities.

Boreal toads

Boreal toads are a species of concern to the USFS; however, no boreal toads in any life stage (egg, tadpole, juvenile, or adult) were found at the project site.

No direct or long-term impacts are expected for any of the above Species of Concern from the Preferred Alternative. No mitigation is required for these species. Impacts and mitigation for the aquatic species are discussed below.

Aquatic Species

Westslope cutthroat trout and a mayfly species of concern have been documented in the proposed project area by MFWP and the MNHP. The mayfly was found in Hebgen Lake and the larger region surrounding Hebgen Lake, but its range does not overlap the proposed project area. Westslope cutthroat trout are listed as present and "abundant" by MFISH, but only one cutthroat trout was collected during a qualitative electro-fishing survey of Grayling Creek near the US 191 bridge in 2005. Cutthroat-rainbow hybrids have been collected by USFS personnel in Grayling Creek, suggesting that cutthroat trout are present in the system. In 1992, westslope cutthroat-rainbow trout hybrids were documented by MFWP in Tepee Creek, a tributary of Grayling Creek.

Direct impacts of the Preferred Alternative include potential short-term increases in fine sediment carried by Grayling Creek, and potential disturbance of in-stream habitat during removal of the existing bridge and construction of a new one. There is also the potential for



individual fish to be displaced, injured, or killed if materials in the streambed are moved, particularly if in-stream activities occur during spawning, incubation, and out-migration periods. No long-term impacts to fish passage are anticipated given that the Preferred Alternative includes a bridge as opposed to a culvert.

Noxious Weeds

The Montana Section Based Weed Mapping Project indicated no noxious weeds were historically present in the proposed project area. Four Montana noxious weeds and one Gallatin County noxious weed species were observed at the project site (Table 3.4).

Table 3.4
Noxious Weeds With Potential to Occur Near the Proposed Project Area

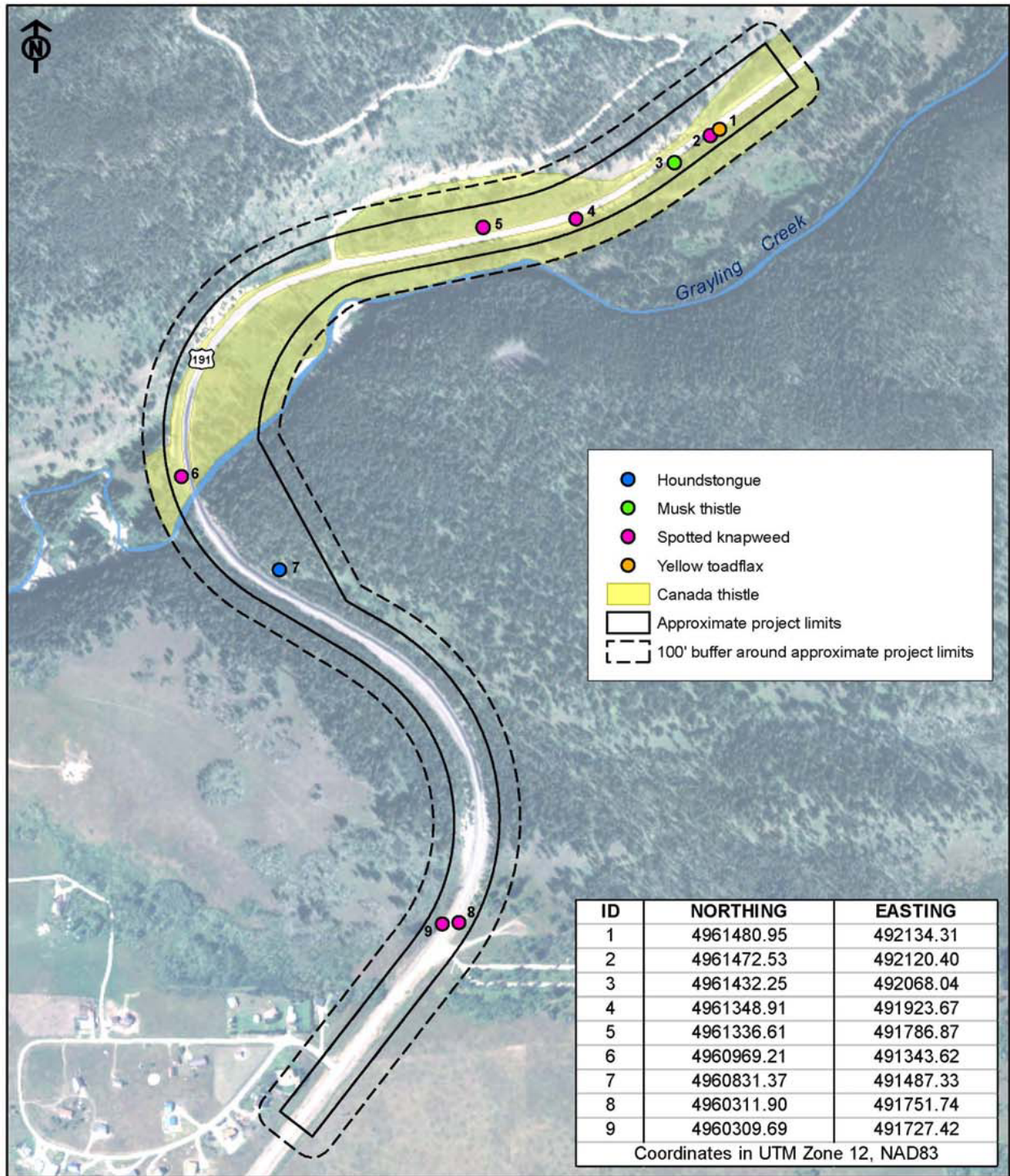
| Scientific Name | Common Name | Area Considered Noxious |
|-------------------------------|------------------|-------------------------|
| <i>Carduus nutans</i> | musk thistle | Gallatin County |
| <i>Centaurea maculosa</i> | spotted knapweed | State of Montana |
| <i>Cynoglossum officinale</i> | houndstongue | State of Montana |
| <i>Cirsium arvense</i> | Canada thistle | State of Montana |
| <i>Linaria vulgaris</i> | yellow toadflax | State of Montana |

The noxious weeds present in the proposed project area are located in disturbed areas such as roadsides, ditches, and areas that experience hydrologic fluctuation (Figure 3-3). Musk thistle, houndstongue, and yellow toadflax are present in low quantities and limited distributions. Spotted knapweed is present throughout the proposed project area in the right-of-way. Canada thistle is present in larger quantities and restricted to the riparian areas of the proposed project area.

The potential impact of noxious weeds is dependent on construction activities, the surrounding vegetation community type, and weed management. Construction activities have the potential to increase noxious weed infestation area and densities throughout the proposed project area because weeds tend to thrive in disturbed soils. In addition, soils brought in for construction may provide better habitat for weeds than native soil. Noxious weeds are opportunistic, and soil disturbance increases the risk for new invasive species and for spreading resident noxious weeds throughout the proposed project area. Reconstruction of the roadway and bridge replacement may affect noxious weed spread in the proposed project areas with effects varying by weed species.



Figure 3-3
Area Noxious Weed Map





Mitigation

Efforts will be made to minimize ground disturbance through the design of steeper side slopes and construction staging areas. The Preferred Alternative is also the smallest footprint of the alternatives analyzed.

Impacts to grizzly bears may be mitigated through bridge design. Vehicle speed, effects of the increase in ADT over time, and disruption of wildlife trails may be addressed by increasing bridge height and passage features for wildlife movement. As noted in the previous section of this EA, the final roadway and bridge design will balance these wildlife passage concerns with the functional design and cost constraints of the proposed project.

The Preferred Alternative minimizes the footprint and impacts to the existing habitat. Construction timing restrictions may be required during spring when grizzlies emerge from hibernation and follow creek bottoms for green-up. Informal consultation with the USFWS is being conducted under Section 7 of the ESA. Recommended conservation measures and conditions of the Biological Opinion will be followed through project design and construction.

Construction activities would comply with the Montana Noxious Weed Law, MDT Standard Specification 107.11.5, titled Noxious Weed Management; MDT Roadside Vegetation Management Plan Integrated Weed Management Component (MDT 2006); and follow the requirements of the Noxious Weed Management Act, Title 7, Chapter 22, Part 21. In Gallatin County, MDT is responsible for weed control within MDT right-of-way. The area will be replanted with desired species in accordance with current MDT construction specifications.

3.7 Threatened/Endangered (T/E) Species

The threatened and endangered species potentially affected by this project were identified through informal consultation with US Fish and Wildlife Service (USFWS) and through MNHP database searches. The greater Yellowstone ecosystem in which the project is located provides suitable habitat for the grizzly bear (*Ursus arctos horribilis*), gray wolf (*Canis lupus*), Canada lynx (*Lynx canadensis*), and bald eagle (*Haliaeetus leucocephalus*), which were all federally-listed at the outset of the environmental investigations for this proposed project.

Gray Wolf

According to the BRR prepared for this proposed project, Gray wolves that are descendants of wolves reintroduced into Yellowstone National Park in the mid-1990s exist in the proposed project area. Gray wolves in the proposed project area are designated as non-essential experimental, and are treated as proposed species for Section 7 purposes. As such, federal agencies are only required to confer with the USFWS when they determine that an action “is likely to jeopardize the continued existence of the species.”

Grayling Creek is a prominent land feature that connects upland habitats west of Yellowstone to Hebgen Lake and is likely used for travel by wolves at any time of year. Segments of the US 191



corridor are heavily used by wolves monitored by the Yellowstone National Park Wolf Project. Although no wolf mortalities have been reported in the proposed project area (RP 9.7± to RP 10.7±), more wolves have been hit by cars at RP 30± (20 miles north of the proposed project area), than anywhere else in Yellowstone and surrounding areas. Pack territories and intensity of range use can vary from year to year, therefore a reassessment at the time of construction will be completed.

The Cougar Creek pack, the closest known pack in the vicinity of the proposed project area, lives to the north and west. They den between RP 30 and the proposed project area. Tracks have been observed on Fir Ridge to the east of the proposed project area, but the highway corridor itself seems to act as a boundary for the pack's territory.

Direct mortality from project construction is not expected. Wolves may avoid the area during construction activities, and no known dens exist in the area.

Determination of Effect

Although wolf use has been documented in the proposed project area, it is not currently used as an established pack territory. No highway-related mortalities have been recorded, the proposed project area provides a small fraction of habitat utilized by wolves' main prey species, and no den or rendezvous sites are known to exist in or near the proposed project area. Based on these factors, this project is **not likely to jeopardize the continued existence of the species**.

Canada Lynx

Lynx exist in the proposed project area. In the contiguous United States lynx were listed in 2000 as a threatened species under the ESA. The USFWS recently redefined locations of critical habitat for lynx, indicating that no critical habitat exists in the proposed project area. The USFS continues to manage lynx habitat, and the proposed project area is in the Upper Madison Lynx Analysis Unit (LAU). The USFS reconfigured LAU's in 2005, and determined that lynx habitat does exist in the proposed project area relative to management guidelines from the lynx Conservation Assessment and Strategy. Subalpine fir and mesic Douglas fir areas that comprise lynx habitat exist in or near the proposed project area. Willow and riparian habitats in the creek bottom are also included because they are components of snowshoe hare habitat, the primary prey for lynx.

No lynx road kills or sightings have been reported, and there are no known den sites in the proposed project area. Lynx have large home ranges in this region due to low snowshoe hare densities.

Most research to date indicates that lynx respond negatively to roads. Direct mortality from project construction itself is not expected though indirect effects may occur through riparian and wetland habitat loss. Riparian and scrub/shrub wetland habitats are important to lynx because they provide habitat for their primary prey, snowshoe hare. Under the Preferred Alternative, lynx may avoid the area during construction activities, and no known dens exist in the area. The Preferred Alternative may result in minor losses to wetlands and impacts to wildlife trails.



Determination of Effect

No lynx road kills or sightings have been reported and lynx have wide home ranges because of their primary prey. Based on this information minor project impacts are expected, and therefore the project is **not likely to adversely affect Canada lynx or its habitat.**

Mitigation

Impacts to wolves and lynx may be mitigated through bridge design. Vehicle speed, effects of the increase in ADT over time, and disruption of wildlife trails may be addressed by increasing bridge height and passage features for wildlife movement. As noted in the previous section of this EA, the final roadway and bridge design will balance these wildlife passage concerns with the functional design and cost constraints of the proposed project.

The Preferred Alternative minimizes the footprint and impacts to the existing habitat.

3.8 Cultural/Archaeological/Historic Resources

A cultural resource inventory was conducted on September 9, 2003 and May 21, 2004 by a cultural resource consultant for MDT. One historic site, the Grayling Creek bridge, was recorded. No prehistoric sites or isolates were located during the survey. A record search of the State Historic Preservation Office (SHPO) found no cultural sites recorded within one mile of the proposed project area.

The Grayling Creek bridge (24GA1656) is not eligible for listing on the National Register of Historic Places (NRHP) because of diminished integrity. See SHPO concurrence letter in Appendix A dated June 28, 2004.

Mitigation

No mitigation is required.



3.9 Visual



Photo 3.1
Grayling Creek Approach
from the North End of the
Proposed Project Area

The bridge over Grayling Creek is a concrete and steel structure (Photo 3.2).



Photo 3.2
Grayling Creek Bridge
Looking Northwest



Photo 3.3
Grayling Creek Approach
from the South End of the
Proposed Project Area

From the south heading north, the vertical grade of the road decreases as it turns to the west and meets Grayling Creek (Photo 3.3).



Photo 3.4
Road through the
Proposed Project Area
Showing Guardrails

Guard rails and curve chevrons are visible along the length of Grayling Curve (Photo 3.4).

The Preferred Alternative would shift the curve slightly to the east and improve the radius and grade slightly. The road would be designed to standards that apply to mountainous terrain, and would follow topography in much the same way as the existing alignment. Construction may result in the loss of some vegetation, including trees and willows. Vegetation within the “clear zone” of the Preferred Alternative would be removed or cut back. The “clear zone” is the area where objects may be struck by vehicles leaving roadways, or obstruct drivers’ views.



Mitigation

Techniques would be employed, if practicable, to mitigate the visual impact of typical brush and tree clearing that would provide a random, meandering woodline edge, as opposed to a linear woodline edge. The disturbed area would be reseeded with desirable vegetation.

3.10 Construction Impacts

Construction activities from the Preferred Alternative could cause temporary inconveniences to area residents and tourist travelers. These could occasionally result in longer travel times, detours, temporary closures, and noise and dust due to the use of heavy machinery. Phased construction is not under consideration, since the construction season is short in this region. Traffic would be maintained on the existing alignment while the new roadway and bridge are constructed. Traffic interruptions would be minimized to the extent possible.

Asphalt plants and gravel crushers that may be required for roadway construction for the Preferred Alternative may require air quality permits to be obtained by the contractor. Asphalt plants are not allowed in the canyon and material will need to be hauled to the project site.

During construction, surface water runoff could be contaminated by spills of petroleum products, lubricants, and hydraulic fluid from construction equipment.

Mitigation

A new Food Storage Order is in effect in the Gallatin National Forest, from March 1 through December 1 each year. The order requires that unattended food, refuse, and attractants be stored in hard-sided vehicles or bear-resistant containers (or hung above ground out of the reach of wildlife) at all locations in the Gallatin National Forest.

According to a recent order issued by the Gallatin National Forest, overnight camping is prohibited at all locations within the Gallatin National Forest except for officially designated and signed US Forest Service camp grounds. This camping restriction is effective at all times and locations within the Gallatin National Forest, thus may affect construction crews working on the project.

There is potential for short-term water quality impacts due to increased erosion and sedimentation during construction activities. Mitigation measures such as permanent erosion control may be included in the SWPPP to ensure that any impacts are minimal.

The project's contractor would be subject to all state and local laws to minimize construction noise by having mufflers on all equipment. Dust control would also be implemented by using either water, or another approved dust-suppressant.



There would be a spill prevention and emergency containment plan made to provide for mitigation of any impacts related to spills. In general, BMP's would be used to minimize the effect of sedimentation and/or run-off during the roadway construction periods.

All advance warning and detour signing would be in accordance with the Manual on Uniform Traffic Control Devices. Therefore, construction impacts from the Preferred Alternative may be minimized.

All construction debris, refuse, etc. will be removed from National Forest lands and disposed of in an appropriate location/facility. It is not anticipated that either material sources or disposal sites would be sought on National Forest lands.

3.11 Cumulative Impacts

Other Pending Actions

- **NH 50-1(25)4 Jct. US 287 – North & South.** This project was completed this year. The scope of this project is to overlay US Highway 287 from RP 3.5± to RP 8.5± and to mill and overlay from RP 8.5± to RP 9.5± to maintain existing width. The latter section is approximately 2.2 meters (seven feet) narrower than the former section. This project will also provide seal and cover, pavement markings, guardrail upgrades, and erosion protection at the Cougar Creek Bridge.
- **NH 50-1(26)0 West Yellowstone – North.** This project was completed this year. The scope of this project is to mill and overlay the four-lane section from just north of the N-12 / US Highway 20 and N-50 / US 191 intersection at MP 0.366±. The project continues north to the city limits of the City of West Yellowstone, MP 0.554±, and ends at MP 3.5±, in the Gallatin National Forest. This project also includes seal and cover, and pavement markings. The design will include ADA ramps on all four corners of the intersection at Gibbon and Canyon Streets.
- **NH 50-2(52)31 Yellowstone Park – Big Sky.** This project is anticipated to be complete before 2008. The scope of this project is to mill and fill; overlay; and provide seal and cover, pavement markings, and guardrail upgrades for the section of National Highway Route 50 / US 191 between RP 31.2± and RP 40.0±. Between RP 40.0± and 45.1± the roadway will receive mill and fill, seal and cover, and pavement markings.
- **STPP 87-1(8)0 Hebgen Lake E & W.** This project is due to be let on March 25, 2008. This project is programmed as a pavement preservation project on State Primary Route 87 / US Highway 287 consisting of a seal and cover from RP 0.0± to RP 6.7±; and a mill, overlay, and seal and cover from RP 6.7± to RP 22.5±.



- **NH 50-1(29)10 Yellowstone National Park.** This project is due to be let in January 2008. This project is programmed as a Pavement Preservation project to seal and cover the section of National Highway Route 50/US 191 between RP 9.5± and 31.2±. There are three bridges on this project which cross Grayling Creek, the Gallatin River and Specimen Creek. The Gallatin and Specimen Creek bridges have concrete decks, so the Grayling Creek Bridge is the only bridge that will receive a new seal and cover due to its plant mix surfacing deck. Pavement markings will also be included in this project.

Each of the above projects has safety enhancement and improved operations as key objectives. Their implementation could have positive cumulative effects on safety, but it is unlikely that they would have cumulative environmental impacts because of their distance from one another. There are no other projects in the area that would contribute to cumulative impacts when considered in conjunction with the proposed project.

The Preferred Alternative would not induce land use changes or promote unplanned growth due to adjacent National Forest land which cannot be developed much further. Also, the two lane configuration is the same as currently exists, and such changes on a short section of road will not increase capacity. Reconstruction and upgrade of the roadway and Grayling Creek bridge may result in positive impacts of safety improvements for all area residents, tourist travelers, and service and emergency vehicles. These improvements could not be provided under the No Build Alternative.

3.12 Regulatory Requirements

The Proposed Action would be in compliance with both the water quality provisions of 75-5-318 M.C.A. for Section 318 authorizations, and stream protection under Sections 87-5-501 through 509 M.C.A., inclusive. An on-site review of the proposed project area with representatives from Montana Fish, Wildlife, and Parks (MFWP) and MDT may be scheduled if necessary. All comments, suggestions, and/or conditions resulting from review of existing data and/or on-site inspections would be documented, included in the proposed project's files, and taken into account in the final design specifications.

The Proposed Action would require a SPA 124 notification under the Montana Stream Protection Act, and the following permits, authorizations, and/or notifications under the Clean Water Act (33 U.S.C. 1251-1376, as amended):

- A COE 404 Permit
- A Section 402 / Montana Pollutant Discharge Elimination System (MPDES) authorization from the DEQ's Permitting & Compliance Division. The Preferred Alternative would require new right-of-way and require an Montana Pollutant Discharge Elimination System (MPDES) construction phase permit, which is issued in response to the 1987 re-authorization of the Clean Water Act. The Clean Water Act requires the U.S.



Environmental Protection Agency to institute a National Pollutant Discharge Elimination System (NPDES) permitting program for storm drainage systems or to approve the state's programs. EPA approved Montana's program in 1987.

Obtaining the MPDES permit requires development of a storm water pollution prevention plan that includes a temporary erosion and sediment control plan. The erosion and sediment control plan identifies BMP's as well as site-specific measures to minimize erosion and prevent eroded sediment from leaving the work zone.

All work would also be in accordance with the Water Quality Act of 1987 (P.L. 100-4), as amended.

3.13 Mitigation Summary

If the proposed project is approved, the following mitigation measures will be implemented through contract specifications or special provisions:

Land Use / Right-of-Way and Easements / Utilities

Neither the No-Build nor the Preferred Alternative would have any substantive impact on the location, distribution, density, growth rate of the area's population, or existing recreation opportunities. No mitigation is required.

Right-of-way in the form of an easement will be issued by the FHWA and consented to by the USFS. The disposition of timber on the easement will be included in the Letter of Consent stipulations.

Social

No mitigation is required.

Floodplains

Final design will need to balance considerations of such factors as bridge span length, wildlife and recreational clearances, hydraulic needs, and cost. The bridge will be designed in accordance with MDT's design frequency guidelines, while evaluating the potential flood hazards associated with the 100 year event. No other mitigation is required.

Wetlands

Projected impacts to wetlands are estimated to be less than 0.2 hectares (0.5 acres). A National Clean Water Act 404 permit will be obtained if required. To the extent practicable, impacts to wetlands will be avoided or minimized. Compensatory mitigation, if required, will be on-site or at a reserve in Watershed 06 - Upper Missouri.



Water Quality

The Preferred Alternative may impact water quality through storm water runoff and erosion. Mitigation of these impacts is achieved through engineering controls such as the use of erosion and sediment control features, revegetation, as well as other Best Management Practices (BMP's). The Preferred Alternative would require a Storm Water Pollution Prevention Plan (SWPPP) and field monitoring/oversight to minimize temporary impacts to water quality due to construction. If material exceeding allowable limits did enter Grayling Creek during construction, it would be removed in coordination with state and federal water quality regulations.

The new bridge over Grayling Creek would be designed in coordination with appropriate resource and permitting agencies.

Waterbodies, Wildlife Resources, and Habitat

Actions that prevent sedimentation and coordinate construction timing may prevent or reduce many of the direct and indirect impacts described above. These activities include those described under MDT's Standards and Specifications Section 107.11, titled "Environmental Protection," Section 208 titled "Water Pollution Control and Stream Preservation," and the requirements of the Montana Stream Protection Act (SPA 124). Instream timing restrictions are likely to be included as part of the Clean Water Act (CWA) Section 404 and SPA 124 regulatory processes.

Efforts will be made to minimize ground disturbance through the design of steeper side slopes and construction staging areas. The Preferred Alternative is also the smallest footprint of the alternatives analyzed.

Impacts to grizzly bears may be mitigated through bridge design. Vehicle speed, effects of the increase in ADT over time, and disruption of wildlife trails may be addressed by increasing bridge height and passage features for wildlife movement. As noted in the previous section of this EA, the final roadway and bridge design will balance these wildlife passage concerns with the functional design and cost constraints of the proposed project.

The Preferred Alternative minimizes the footprint and impacts to the existing habitat. Construction timing restrictions may be required during spring when grizzlies emerge from hibernation and follow creek bottoms for green-up. Informal consultation with the USFWS is being conducted under Section 7 of the ESA. Recommended conservation measures and conditions of the Biological Opinion will be followed through project design and construction.



Construction activities would comply with the Montana Noxious Weed Law, MDT Standard Specification 107.11.5, titled Noxious Weed Management; MDT Roadside Vegetation Management Plan Integrated Weed Management Component (MDT 2006); and follow the requirements of the Noxious Weed Management Act, Title 7, Chapter 22, Part 21. In Gallatin County, MDT is responsible for weed control within MDT right-of-way. The area will be replanted with desired species in accordance with current MDT construction specifications.

Threatened / Endangered (T/E) Species

Impacts to wolves and lynx may be mitigated through bridge design. Vehicle speed, effects of the increase in ADT over time, and disruption of wildlife trails may be addressed by increasing bridge height and passage features for wildlife movement. As noted in the previous section of this EA, the final roadway and bridge design will balance these wildlife passage concerns with the functional design and cost constraints of the proposed project.

The Preferred Alternative minimizes the footprint and impacts to the existing habitat.

Cultural / Archaeological / Historic Resources

No mitigation is required.

Visual

Techniques would be employed, if practicable, to mitigate the visual impact of typical brush and tree clearing that would provide a random, meandering woodland edge, as opposed to a linear woodland edge. The disturbed area would be reseeded with desirable vegetation.

Construction Impacts

A new Food Storage Order is in effect in the Gallatin National Forest, from March 1 through December 1 each year. The order requires that unattended food, refuse, and attractants be stored in hard-sided vehicles or bear-resistant containers (or hung above ground out of the reach of wildlife) at all locations in the Gallatin National Forest.

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The project's contractor would be subject to all state and local laws to minimize construction noise by having mufflers on all equipment. Dust



control would also be implemented by using either water, or another approved dust-suppressant.

There would be a spill prevention and emergency containment plan made to provide for mitigation of any impacts related to spills. In general, BMP's would be used to minimize the effect of sedimentation and/or run-off during the roadway construction periods.

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All construction debris, refuse, etc. will be removed from National Forest lands and disposed of in an appropriate location/facility. It is not anticipated that either material sources or disposal sites would be sought on National Forest lands.



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4.0 LIST OF PREPARERS

The responsibilities and qualifications of the interdisciplinary team that prepared the Grayling Creek Environmental Assessment are listed below:

| Reviewer/Affiliation | Role | Education and Experience |
|--|---|---|
| Theodore G. Burch Program Development Engineer FHWA | Lead Agency | B.S., Civil Engineering, Masters of Engineering – Structures, Program Development Engineer and Team Leader for the statewide program areas of planning, environment, safety and design, right-of-way, and materials. 19 years experience in highway engineering, environmental review and program/project management. |
| Carl James Transportation Specialist FHWA | Lead Agency | 30+ years experience in planning, design, construction, environment, and right-of-way. |
| Jeffrey A. Patten Operations Engineer FHWA | Lead Agency | B.S., Construction Management, 17 years experience in highway engineering, planning, environmental review, traffic analysis, and program/project management. |
| Jeffrey M. Ebert, P.E. Butte District Administrator MDT | Lead Agency | B.S., Civil Engineering. Six years experience in construction project management and estimating; seventeen years in highway planning, engineering, and program management. |
| Joe Olsen, P.E. Butte District Engineering Services Engineer MDT | Lead Agency | B.S., Geological Engineering. Over 20 years experience in highway planning, engineering and design; construction; and both project and program management/development. |
| Gabe Priebe, P.E. Consultant Project Supervisor MDT | Lead Agency, Interagency Coordination | B.S., Civil Engineering, B.A., Mathematics. Seven years experience in construction, highway engineering, planning-level safety analysis and project management. |
| Thomas L. Hansen, P.E. Engineering Section Supervisor – Environmental Services MDT | Lead Agency, Environmental Compliance | B.S., Civil Engineering. Four years in transportation planning, 15 years in project management, and three years in environmental programming. |



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| Preparer/Affiliation | Role | Education and Experience |
|---|--|---|
| Darryl L. James, AICP HKM Engineering Inc. | Project Management, Environmental Compliance | M.P.A., with an Environmental Concentration; B.A., Public Affairs and Political Science. Senior consultant with over 12 years of professional experience in transportation planning, NEPA analysis, and technical report writing. |
| J. Zoe Barnard HKM Engineering Inc. | Document Preparation | M.A., Political Science; B.S., Environmental Engineering. Over five years experience in research and statistical analysis relating to environmental and public policy issues. |
| Sarah Nicolai HKM Engineering Inc. | Document Preparation | B.A., Civil Engineering (ongoing). Over three years of legal and policy-related experience, planning, and environmental documentation. |



5.0 DISTRIBUTION LIST

Federal Agencies

U.S. Environmental Protection Agency
Region VIII, Montana Office
Federal Building, 10 NW 15th Street, Suite 3200
Helena, MT 59626-0096
Attn: John F. Wardell, Director

U.S. Army Corps of Engineers
Regulatory Office, c/o DNRC
1520 East 6th Avenue
Helena, MT 59620
Attn: Allan Steinle, Montana Program
Manager

U.S. Department of the Interior
Fish & Wildlife Service
Montana Field Office
585 Shepherd Way
Helena, MT 59601
Attn: Mark Wilson, Field Supervisor
Scott Jackson, Wildlife Biologist

U.S. Forest Service
Gallatin National Forest
Hebgen Lake District Office
P.O. Box 520
331 Hwy 191 N.
West Yellowstone, MT 59758
Attn: Bill Queen, District Ranger
Andy Pils, Wildlife Biologist
Clint Sestrich, Fisheries Biologist

U.S. Department of the Interior
Yellowstone National Park
P.O. Box 168
Yellowstone National Park, WY 82190-0168
Attn: Suzanne Lewis, Superintendent

State Agencies

Montana Department of Environmental Quality
1520 East 6th Avenue, P. O. Box 200901
Helena, MT 59620-0901
Attn: Steve Welch, Administrator,
Permitting & Compliance Division
Tom Ellerhoff, Support Services,
Director's Office

Montana Department of Natural Resources &
Conservation
1625 11th Avenue
P.O. Box 201601
Helena, MT 59104-0437
Attn: Mary Sexton, Director

Montana Environmental Quality Council
Office of the Director
Capitol Post Office
P. O. Box 215
Helena, MT 59620

Montana Governor's Office
Executive Office
Room 204, State Capitol
Helena, MT 59620-0801
Attn: Brian Schweitzer, Governor

Montana State Historic Preservation Office
1410 8th Avenue
P.O. Box 201202
Helena, MT 59620-1202
Attn: Dr. Mark Baumler, Historian

Montana Fish, Wildlife & Parks
Region 3 Office
1400 South 19th
Bozeman, MT 59718
Attn: Kurt Alt, Regional Wildlife Manager
Craig Jourdonnais, Wildlife Biologist
Bruce Rich, Regional Fisheries Manager
Joel Tohtz, Fisheries Biologist



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Montana Transportation Commission
P.O. Box 201001
Helena, MT 59620-1001
Attn: Chairman

Montana State Library
1515 East 6th Avenue, P.O. Box 201800
Helena, MT 59620-1800
Attn: Roberta Gebhardt, Collections
Management Librarian

Local Agencies

City of West Yellowstone
220 Yellowstone Ave.
West Yellowstone, MT 59758

Gallatin County
311 West Main Street
Bozeman, MT 59715



6.0 COMMENTS AND COORDINATION

6.1 Public Agencies

MDT contacted the following agencies and parties in preparing this EA.

Agencies with Jurisdiction and/or Permitting Authority

Department of the Interior - U.S. Fish & Wildlife Service (USFWS)
Montana Department of Environmental Quality (DEQ, MPDES authorization)
Montana Fish, Wildlife, and Parks (MFWP, SPA 124 notification)
Montana State Historic Preservation Office (SHPO, reviewed/concurred with "Determination of Effect")
U.S. Environmental Protection Agency (EPA)
U.S. Forest Service (Gallatin National Forest)
U.S. Army Corps of Engineers (COE)

Other Agencies, Groups, or Persons Contacted

U.S. Department of the Interior – Yellowstone National Park (YNP)
U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS)

6.2 Public Involvement

Public Meetings

A public meeting was held by MDT on April 22, 2004, at 7 p.m. The meeting was held at the West Yellowstone School in West Yellowstone, Montana. Four written comments were received. One comment was in opposition of the project. Two comments supported the project specifically pointing out improvements for snowmobiles, bikers, and hikers. The final comment was related specifically to location of the snowmobile trail. The purpose of the meeting was to discuss the proposed project as well as another proposed bridge project in the area. At the meeting, Bryan Miller of MDT described the proposed project, the available funding, the budget, and the schedule for construction.

Public Hearing

A Public Hearing will be conducted during the public comment period on this Environmental Assessment. This document is available for public viewing at the West Yellowstone Public Library, USFS Gallatin National Forest office, and the West Yellowstone Chamber of Commerce office. The Environmental Assessment can also be viewed on the MDT web page at www.mdt.mt.gov/pubinvolve/eis_ea. Comments to the Environmental Assessment are due back to MDT within thirty (30) days of the transmittal date on the distribution letter accompanying this EA.



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